

We claim:

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~~1. A method of preparing a composition enriched for anthocyanins, comprising:~~

- ~~a) providing a crude extract of a plant material, wherein said plant material contains anthocyanins;~~
- ~~b) filtering said crude extract;~~
- ~~c) contacting said crude extract with a brominated polystyrene resin, wherein said resin adsorbs said anthocyanins;~~
- ~~d) washing said resin; and~~
- ~~e) eluting said anthocyanins from said brominated polystyrene resin to obtain a composition enriched for anthocyanins.~~

~~2. The method of claim 1, wherein said composition comprises at least 8% anthocyanins.~~

~~3. The method of claim 2, wherein said composition comprises between about 8-40% anthocyanins.~~

~~4. The method of claim 2, wherein said composition comprises about 25% anthocyanins.~~

~~5. The method of claim 1, wherein said composition further comprises proanthocyanins.~~

~~6. The method of claim 5, wherein said composition comprises at least 5% proanthocyanins.~~

~~7. The method of claim 1, wherein said composition further comprises total phenols~~

~~8. The method of claim 7, wherein said composition comprises at least 20% total phenols.~~

~~9. The method of claim 1, wherein said crude extract is prepared by extracting a dried or fresh plant material with an acidified extraction solvent.~~

~~10. The method of claim 9, wherein said acidified extraction solvent comprises an aqueous solution having between about 0-95% ethanol and between about 0.5-3% acid.~~

~~11. The method of claim 10, wherein said acid is sulfuric acid or hydrochloric acid.~~

~~12. The method of claim 9, wherein said acidified extraction solvent comprises an aqueous solution having between about 0-100% methanol and between about 0.5-3% acid.~~

~~13. The method of claim 12, wherein said acid is sulfuric acid or hydrochloric acid.~~

~~14. The method of claim 1, wherein said filtering comprises adding a filter aid to said crude extract to form a suspension, and filtering said suspension through a bed of said filter aid.~~

~~15. The method of claim 14, wherein said filter aid is diatomaceous earth or cellulose.~~

~~16. The method of claim 1, wherein said filtering comprises passing said crude extract through a bag filter.~~

17. The method of claim 1, wherein said resin is washed with water containing at least 0.1% acid.

18. The method of claim 17, wherein said acid is acetic acid.

19. The method of claim 1, wherein said anthocyanins are eluted from said brominated polystyrene resin with 70:30 ethanol/water.

20. The method of claim 1, wherein said plant material is selected from the group consisting of blueberries, bilberries, blackberries, strawberries, red currents, black currants, cranberries, cherries, raspberries, grapes, currants, elderberries, hibiscus flowers, bell peppers, red cabbage, purple corn, and violet sweet potatoes.

21. The method of claim 20, wherein said plant material is bilberry.

22. The method of claim 20, wherein said plant material is blueberry.

23. The method of claim 1, further comprising passing said composition isolated in step (e) through an anion exchange column.

24. The method of claim 1, wherein said composition is further combined with an excipient.

25. The method of claim 24, wherein said excipient is selected from the group consisting of preservatives, carriers, buffering agents, thickening agents, suspending agents, stabilizing agents, wetting agents, emulsifying agents, coloring agents and flavoring agents.

26. The method of claim 1, wherein said crude extract of step (a) further comprises pectinase.

27. The method of claim 26, wherein said pectinase is present in an amount between about 0 and 0.12% by weight of said plant material.

28. The method of claim 1, wherein said composition is useful in treating humans and mammals.

29. A method of preparing a composition enriched for anthocyanins, comprising:

- providing a crude extract of a plant material, wherein said plant material contains anthocyanins in addition to flavonoid glycosides, plant sterols, fatty acids, triglycerides, and other impurities that are more polar than said anthocyanins;
- filtering said crude extract;
- adding a source of bisulfite ions to said filtered, crude extract to form a sulfited extract comprising anthocyanin-bisulfite adducts;
- contacting said sulfited extract with a first resin capable of adsorbing said flavonoid glycosides, plant sterols, fatty acids, triglycerides;

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e) eluting said anthocyanin-bisulfite adducts from said first resin together with said more polar impurities to form a first product containing said anthocyanin-bisulfite adducts;

f) acidifying said first product, whereby said anthocyanin-bisulfite adducts are cleaved to provide uncomplexed anthocyanins;

g) contacting said acidified solution from step (f) with a brominated polystyrene resin, wherein said resin adsorbs said uncomplexed anthocyanins;

h) washing said brominated polystyrene resin to remove said more polar impurities; and

i) eluting said anthocyanins from said brominated polystyrene resin to obtain a composition enriched for anthocyanins.

30. The method of claim 29, wherein said composition comprises at least 8% anthocyanins.

31. The method of claim 30, wherein said composition comprises between about 8-55% anthocyanins.

32. The method of claim 30, wherein said composition comprises about 25% anthocyanins.

33. The method of claim 29, wherein said crude extract is prepared by extracting a dried or fresh plant material with an extraction solvent.

34. The method of claim 29, wherein said extraction solvent comprises solution containing about 0-95% ethanol in water.

35. The method of claim 29, wherein said extraction solvent comprises a solution containing about 0-100% methanol in water.

36. The method of claim 29, wherein said filtering comprises adding a filter aid to said crude extract to form a suspension, and filtering said suspension through a bed of said filter aid.

37. The method of claim 36, wherein said filter aid is diatomaceous earth or cellulose.

38. The method of claim 29, wherein said source of bisulfite ions is sodium metabisulfite, sodium bisulfite, or sulfuric acid.

39. The method of claim 29, wherein said first resin is a reversed phase resin.

40. The method of claim 39, wherein said reversed phase resin is selected from the group consisting of polymethacrylate, styrene, divinylbenzene, trivinylbenzene, alkylvinylbenzene, acrylvinylbenzene, and methyl methacrylate.

41. The method of claim 29, wherein said anthocyanin-bisulfite adducts are eluted from the

first resin with water.

42. The method of claim 29, wherein said first product is acidified in step (f) to pH 1.0-1.25.

43. The method of claim 29, wherein said anthocyanins are eluted from said brominated polystyrene resin with 70:30 ethanol/water.

44. The method of claim 29, wherein said plant material is selected from the group consisting of blueberries, bilberries, blackberries, strawberries, red currents, black currants, cranberries, cherries, raspberries, grapes, currants, elderberries, hibiscus flowers, bell peppers, red cabbage, purple corn, and violet sweet potatoes.

45. The method of claim 44, wherein said plant material is bilberry.

46. The method of claim 44, wherein said plant material is blueberry.

47. The method of claim 29, further comprising passing said composition isolated in step (i) through an anion exchange column.

48. The method of claim 29, further comprising combining the composition with an excipient.

49. The method of claim 48, wherein said excipient is selected from the group consisting of preservatives, carriers, buffering agents, thickening agents, suspending agents, stabilizing agents, wetting agents, emulsifying agents, coloring agents and flavoring agents.

50. The method of claim 29, wherein said crude extract of step (a) further comprises pectinase.

51. The method of claim 50, wherein said pectinase is present in an amount between about 0 and 0.12% by weight of said plant material.

52. The method of claim 29, wherein said composition is useful in treating humans and mammals.

53. A composition enriched for anthocyanins, prepared by the method of claim 1.

54. The composition of claim 53, further comprising an excipient.

55. The method of claim 54, wherein said excipient is selected from the group consisting of preservatives, carriers, buffering agents, thickening agents, suspending agents, stabilizing agents, wetting agents, emulsifying agents, coloring agents and flavoring agents.

56. The composition of claim 53, wherein said composition is useful for treating humans and mammals.

57. A composition enriched for anthocyanins, prepared by the method of claim 29.

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Exhibit 6*

58. The composition of claim 57, further comprising an excipient.

59. The method of claim 58, said excipient is selected from the group consisting of preservatives, carriers, buffering agents, thickening agents, suspending agents, stabilizing agents, wetting agents, emulsifying agents, coloring agents and flavoring agents.

60. The composition of claim 57, wherein said composition is useful for treating humans and mammals.

61. A blueberry extract prepared according to the method of claim 1.

62. The blueberry extract of claim 61, wherein said extract comprises between about 8-35% anthocyanins by weight of said extract.

63. A blueberry extract prepared according to the method of claim 29.

64. The blueberry extract of claim 63, wherein said extract comprises between about 8-40% anthocyanins by weight of said extract.

65. A bilberry extract prepared according to the method of claim 1.

66. The bilberry extract of claim 65, wherein said extract comprises about 8-50% anthocyanins by weight of said extract.

67. A bilberry extract prepared according to the method of claim 29.

68. The bilberry extract of claim 67, wherein said extract comprises about 8-55% anthocyanins by weight of said extract.

69. A bilberry extract comprising 3.3% delphinidin-3-O-galactoside, 3.9% delphinidin-3-O-glucoside, 2.1 cyanidin-3-O-galactoside, 2.6% delphinidin-3-O-arabinoside, 2.8% cyanidin-3-O-glucoside, 1.0% petunidin-3-O-galactoside, 2.5% petunidin-3-O-glucoside, 1.7% cyanidin-3-O-arabinoside, 0.3% peonidin-3-O-galactoside, 0.8% petunidin-3-O-arabinoside, 2.1% malvidin-3-O-galactoside/peonidin-3-O-glucoside, 2.5% malvidin-3-O-glucoside, 0.1% peonidin-3-O-arabinose, and 0.6% malvidin-3-O-arabinose.

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